

A thorny tale: *Cylindropuntia pallida* (Hudson pear) biocontrol in New South Wales, Australia

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Summary *Cylindropuntia* spp. (Cactaceae) are weeds of arid and semi-arid regions of mainland Australia, with eight species currently recorded as naturalised. All of these are recorded in the north west of New South Wales (NSW), however, *Cylindropuntia pallida* (Hudson pear) is considered the most problematic in this region, with the weed currently thought to occupy ca. 100,000 hectares. (Modelling has shown that it has the potential to spread to 600,000 hectares in NSW and 112 million hectares across Australia in the next two to three decades if left unchecked.) Hudson pear reduces the viability of agricultural enterprises, land values and severely impacts native fauna and flora. A biocontrol program was initiated in Australia in 1925 for the control of *Cylindropuntia imbricata*, with the introduction of a cochineal, *Dactylopius tomentosus* (Dactylopiidae). More recently, exploratory work in the southern United States of America and Mexico yielded 22 lineages of *D.*

tomentosus. Of these, six lineages were identified (through a systematic and quantifiable process) as having the greatest impact on each of their eight *Cylindropuntia* spp. targets. The *D. tomentosus* lineage 'californica var. parkeri', was earmarked to tackle the core of the Hudson pear infestation in NSW, Australia. To understand the potential dispersal and impact of the cochineal post-release, two long-term field monitoring sites were established in 2017 and are currently sampled every three months. To enhance the biocontrol effort in the core Hudson pear infestation, a decision was made to invest in a dedicated cochineal mass-rearing facility which would be able to produce large numbers of cochineal-infested cladodes as part of an augmented approach. Here we discuss the progress of the biocontrol programme for Hudson pear and its prospects for the future.

Keywords Mass-rearing, impact, lineage